APPENDIX B

- **B-1 RESULTS OF SOIL VAPOR ANALYSES**
- **B-2 CHAIN-OF-CUSTODY FORMS**
- B-3 DAILY OPENING, CLOSING, AND CONTINUING CALIBRATION VERIFICATION REPORTS

APPENDIX B-1

RESULTS OF SOIL VAPOR ANALYSES



Mr. Leo Williamson Geofon 22632 Golden Springs Drive Suite 270 Diamond Bar, CA 91765

SUBJECT: DATA REPORT – JET PROPULSION LAB – 4800 OAK GROVE DRIVE – PASADENA, CA - GEOFON PROJECT #04-4304-480 JPL 1

HP Labs Project # GF051402T2

Mr. Williamson:

Please find enclosed a data report for the above referenced location. Soil vapor samples were analyzed on-site in DOHS certified mobile laboratory (CERT #1667).

Project Summary

Soil vapor from 12 points was analyzed for:

- volatile halogenated hydrocarbons by EPA Method 8010
- volatile aromatic hydrocarbons (BTEX) by Modified EPA Method 8020
- 1 extra LCS

The samples were received on-site in appropriate containers with appropriate labels, seals, and chain-of-custody documentation.

Project Narrative

The results for all analyses and required QA/QC analyses are summarized in the enclosed tables. All calibrations, blanks, surrogates, and spike recoveries fulfill quality control criteria.

HP Labs appreciates the opportunity to provide analytical services to Geofon on this project. If you have any questions relating to this data or report, please do not hesitate to contact us.

Sincerely,

/s. Tamara Davis

Lab Director



GEOFON PROJECT # 04-4304-480 JPL 1 JET PROPULSION LABORATORY 4800 OAK GROVE DRIVE PASADENA, CA

HP Labs Project #GF051402T2
GC SHIMADZU 14A
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8021) ANALYSES OF SOIL VAPOR SOIL VAPOR DATA IN UG/L-VAPOR

ANALYSIS TIME 06:54 07:23 07:46 08:09 08:32 08:54 09:18 09:42 10:04 10:27 10:51 11:42 12:06 SAMPLING DEPTH (feet)		AMBIENT	SVW37-	\$VW36-	SVW36-	SVW33-	SVW33-	\$VW33-VPE-	SVW33-	SVW4-	SVW4-	\$VW17-	SVW32-	SVW32-VPH-
ANALYSISTME 06:84 07:23 07:46 08:09 08:32 08:54 09:18 09:42 10:04 10:27 10:51 11:42 12:06 ANALYSISTME 06:84 07:23 07:46 08:09 08:32 08:54 09:18 09:42 10:04 10:27 10:51 11:42 12:06 ANALYSISTME 06:84 07:23 07:46 08:09 08:32 08:54 09:18 09:42 10:04 10:27 10:51 11:42 12:06 ANALYSISTME 06:84 07:23 07:46 08:09 08:32 08:54 09:18 09:42 10:04 10:27 10:51 11:42 12:06 ANALYSISTME 06:84 07:23 07:46 08:09 08:32 08:54 09:18 09:42 10:04 10:27 10:51 11:42 12:06 ANALYSISTME 07:00 08:00 08:00 08:00 08:32 08:54 09:18 09:42 10:04 10:27 10:51 11:42 12:06 ANALYSISTME 08:00 08:00 08:00 08:00 08:32 08:54 09:18 09:42 10:04 10:27 10:51 11:42 12:06 ANALYSISTME 08:00 08:00 08:00 08:00 08:00 08:32 08:54 09:18 09:42 10:04 10:27 10:51 11:42 12:06 ANALYSISTME 08:00 0		BLANK	VPJ-01	VPB-02	VPC-03	VPD-04	VPE-05	06 DUP	VPF-07	VPB-08	VPD-09	VPC-10	VPH-11	12 DUP
SAMPLING DEPTH (Rein) - 185 35 65 85 85 105 105 120 20 56 36 165 155 155 VOLUME WITHDRAWN (cc) - 800 200 280 400 480 540 540 140 284 204 880 740 VOLUME INJECTED 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	DATE	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02
VOLUME WITHORAWN (cc)	ANALYSIS TIME	06:54	07:23	07:46	08:09	08:32	08:54	09:18	09:42	10:04	10:27	10:51	11:42	12:06
VOLUME NUTEDRAWN (cc)	SAMPLING DEPTH (feet)		185	35	55	85	105	105	120	20	56	36	155	155
VOLUME INJECTED 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	VOLUME WITHDRAWN (cc)		800	200	280	400	480	540	540	140	284	204	680	
CARBON TETRACHLORIDE	VOLUME INJECTED	1	1	1	1	1	1	1	1	1	1	1	1	1
CHLOROETHANE nd nd nd nd nd nd nd n	DILUTION FACTOR	1	1	1	1	1	1	1	1	1	1	1	1	1
CHLOROETHANE	CARBON TETRACHLORIDE	nd	nd	1.5	nd	1.5	7.4	3.6	29	nd	hn	nd	nd	nd
CHLOROFORM	CHLOROETHANE													
1.1-DICHLORO ETHANE	CHLOROFORM													
1.2-DICHLORO ETHANE	1.1-DICHLORO ETHANE													
1.1-DICHLORO ETHENE	1.2-DICHLORO ETHANE													
CIS-1,2-DICHLORO ETHENE	1.1-DICHLORO ETHENE													
TRANS-1,2-DICHLORO ETHENE nd	CIS-1.2-DICHLORO ETHENE													
DICHLOROMETHANE nd nd nd nd nd nd nd n	TRANS-1.2-DICHLORO ETHENE													
TETRACHLORO ETHENE	DICHLOROMETHANE	nd												
1.1.1,2-TETRACHLORO ETHANE nd nd <th< td=""><td>TETRACHLORO ETHENE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td> - -</td><td></td><td></td><td></td><td></td><td></td></th<>	TETRACHLORO ETHENE								- -					
1.1.2,2-TETRACHLORO ETHANE 1.1.1-TRICHLORO ETHANE 1.1.1-TRICHLORO ETHANE 1.1.2-TRICHLORO ETHANE 1.1.1-TRICHLORO ETHANE 1.1.2-TRICHLORO ETHANE 1.	1.1.1.2-TETRACHLORO ETHANE													
1.1,1-TRICHLORO ETHANE	1.1.2.2-TETRACHLORO ETHANE	nd									-			
1.1.2-TRICHLORO ETHANE nd nd<	1,1,1-TRICHLORO ETHANE									=				
TRICHLORO ETHENE nd 1.5 2.2 nd	1.1.2-TRICHLORO ETHANE												-	
VINYL CHLORIDE nd	TRICHLORO ETHENE				· -									
TRICHLOROFLUOROMETHANE (FR11) nd						_				-				
DICHLORODIFLUOROMETHANE (FR12) nd		-												
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113) nd	` '					_							· · · ·	
BENZENE nd nd nd nd nd nd nd n	1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	· ·			-									
CHLOROBENZENE nd	BENZENE	nd	nd	nd	nd	nd								
ETHYLBENZENE	CHLOROBENZENE								-					
TOLUENE nd nd <t< td=""><td>ETHYLBENZENE</td><td></td><td>-</td><td></td><td></td><td>_</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	ETHYLBENZENE		-			_								
m&p-XYLENES nd	TOLUENE		nd	· ·										
O-XYLENE nd	m&p-XYLENES	· · · · · · · · · · · · · · · · · · ·									-			
SURROGATES 1.4 DIFLUORO BENZENE 96% 101% 101% 99% 101% 101% 100% 101% 103% 105% 96% 102% 4 BROMOFLUORO BENZENE 99% 102% 103% 101% 103% 104% 103% 104% 106% 100% 101% 103%	o-XYLENE							***						
4 BROMOFLUORO BENZENE 99% 102% 103% 101% 103% 103% 104% 103% 104% 106% 100% 101% 103%	SURROGATES													
4 BROMOFLUORO BENZENE 99% 102% 103% 101% 103% 103% 104% 103% 104% 106% 100% 101% 103%	1,4 DIFLUORO BENZENE	96%	101%	101%	99%	101%	101%	101%	100%	101%	103%	105%	96%	102%
	4 BROMOFLUORO BENZENE													
	ND INDICATES NOT DETECTED AT A DETECTION	LIMIT OF 1.0	UG/L-VAPC	R FOR EAC	H COMPOUN									

ANALYSES PERFORMED ON-SITE IN CA DOHS MOBILE LABORATORY (CERT #1667)

ANALYSES PERFORMED BY: MARK BURKE



GEOFON PROJECT #04-4304-480 JPL 1 JET PROPULSION LABORATORY 4800 OAK GROVE DRIVE PASADENA, CA

HP Labs Project #GF051402T2 GC SHIMADZU 14A

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8021) ANALYSES OF SOIL VAPOR

AREA COUNTS

SAMPLE NAME DATE ANALYSIS TIME SAMPLING DEPTH (feet)	BLANK 05/14/02 6:54 	BLANK 05/14/02 6:54	01 05/14/02 7:23	01 05/14/02	02 05/14/02	02 05/14/02	03	03	04	04
ANALYSIS TIME	!			05/14/02	05/14/02	05/44/00	0014 4100	05111100	2511 1 200	
	6:54 	6:54	7.00		Q3/ 17/0Z	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02
	-		1,23	7:23	7:46	7:46	8:09	8:09	8:32	8:32
	1		185	185	35	35	55	55	85	85
VOLUME WITHDRAWN (cc)	!		800	800	200	200	280	280	400	400
VOLUME INJECTED	1	1	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1	1	1]	1	1
	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd	nd	nd	7.6	65.2	nd	nd	7.6	67.4
CHLOROETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1.1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	:
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	1
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	:
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	лd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	:
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	:
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd	nd	:
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	, nd	nd	nd	
1,1,1-TRICHLORO ETHANE	nd	nď	nd	nd	nd	nd	nd	nd	nd	
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd		лd	nd	nd	
TRICHLORO ETHENE	nd	nd	9.0	1.9	9.0	2.6	nd	nd	nd	
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd	nd	nd	nd	
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	пф	nd			nd	
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	กป	nd					nd	
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	лd	nd	nd	nd	nd	nd	nd	nd	nd	
BENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	
CHLOROBENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	
ETHYLBENZENE	nd	nd	nd	nd	nd	nd	nd	nd	nd	
TOLUENE	nd	nd	лd	nd	nd	l nd	nd	nd	nd	i nd
m&p-XYLENES	nd	nd	nđ	nd	nd	nd	nd	nd	nd	
o-XYLENE	nd	nd	nd	nd	nd	ndnd	nd	nd	nd	<u>і п</u>
SURROGATES			•							
1,4 DIFLUORO BENZENE	8.6	15.8	8.6	16.5						
4 BROMOFLUORO BENZENE	17.8	34.8	17.8	36.0	17.8	36.2	17.8	35,6	17,8	36.2
ND INDICATES NOT DETECTED AT A DETECTION L	IMIT OF 1.0 UG/L	-VAPOR FOR	EACH COMPO	UND						

ANALYSES PERFORMED ON-SITE IN CA DOHS MOBILE LABORATORY (CERT #1667)

ANALYSES PERFORMED BY: MARK BURKE



GEOFON PROJECT #04-4304-480 JPL 1 JET PROPULSION LABORATORY 4800 OAK GROVE DRIVE PASADENA, CA

HP Labs Project #GF051402T2
GC SHIMADZU 14A
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8021) ANALYSES OF SOIL VAPOR
AREA COUNTS

SAMPLE NAME	SVW33-VPE-05	\$VW33-VPE-05	SVW33-VPE-06	SVW33-VPE-06	SVW33-VPF-07	SVW33-VPF-07	SVW4-VPB-08	SVW4-VPB-08
			DUP	DUP				
DATE	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02
ANALYSIS TIME	8:54	8:54	9:18	9:18	9:42	9:42	10:04	10:04
SAMPLING DEPTH (feet)	105	105	105	105	120	120	20	20
VOLUME WITHDRAWN (cc)	480	480	540	540	540	540	140	140
VOLUME INJECTED	1	1	1	1	1	1	1	1
DILUTION FACTOR	1	1		1	1	1	1	1
	RT	AREA	RT	AREA	RT	AREA	ŔŤ	AREA
CARBON TETRACHLORIDE	7.7	330	7.6	172	7.6	130	nd	nd
CHLOROETHANE	nd	nď	nd	nd	nd	nd	nd	nd
CHLOROFORM	ndi	nd	nd	nd	пd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	no
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	no
1,1-DICHLORO ETHENE	4.1	1.4	4.1	0.91	nd	nd	nd	nc
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	пd	nd	nd	nd	no
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	no
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	no
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	no
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	no
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	no
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	no
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	по
TRICHLORO ETHENE	nd	nd	nd	nd	nđ	nd	9.1	12.8
VINYL CHLORIDE	nď	nd	nd	nd	nd	nd	nd	no
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	лd	nd	nd	nd	no
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nď	nd	nd	nd	no
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	4.2	29.6	nd	nd	nd	nd	nd	no
BENZENE	nd	nd	nd	nd	nd	nd	nd	no
CHLOROBENZENE	nd	лd	nd	nd	nd	nd	nd	no
ETHYLBENZENE	nd	nď	nd	nd	nd	nd	nd	no
TOLUENE	nd	nd	nd	nd	nd	nd	nď	no
m&p-XYLENES	nd	nd	nđ	nd	nd	nd	nd	no
o-XYLENE	nď	nd	nd	nd	nd	nd	nd	no
SURROGATES	•							
1,4 DIFLUORO BENZENE	8.6	16.6	8,6	16.5	8.6	16,4	8.6	16.
4 BROMOFLUORO BENZENE	17.8	36.4	17.8	36.7	17.8	36.1	17.8	36.7

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN CA DOHS MOBILE LABORATORY (CERT #1667)

ANALYSES PERFORMED BY: MARK BURKE



GEOFON PROJECT #04-4304-480 JPL 1 JET PROPULSION LABORATORY 4800 OAK GROVE DRIVE PASADENA, CA

HP Labs Project #GF051402T2 GC SHIMADZU 14A VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8021) ANALYSES OF SOIL VAPOR AREA COUNTS

SAMPLE NAME	SVW4-VPD-09	SVW4-VPD-09	SVW17-VPC-10	SVW17-VPC-10	SVW32-VPH-11	SVW32-VPH-11	SVW32-VPH-12 DUP	SVW32-VPH-12 DUP
DATE	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02	05/14/02
ANALYSIS TIME	10:27	10:27	10:51	10:51	11:42	11:42	12:06	12:06
	56	56	36	36	155	155	155	155
SAMPLING DEPTH (feet)	284	284	204	204	680	680	740	740
VOLUME WITHDRAWN (cc)	204	204	204	204	1	1	140	1
VOLUME INJECTED	1 1	1	1	1	1	1		1
DILUTION FACTOR	RT	AREA	RT	AREA		AREA	RT	AREA
CARBON TETRACHLORIDE	nd	nd nd	nd	nd	nd	nd	nd	nd
CHLOROETHANE	nd	nd	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd	nd	nd
1.1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1.2-DICHLORO ETHANE	nd	nd	8,0	79.9	nd	nd	nd	nd
1.1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nđ	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	12.9	2.4	nd	nd	nd	nd
1.1.1.2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1.1.2.2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1.1.1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	9.1	1.3	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd		nd	nď	nd
TRICHLOROFLUOROMETHANE (FR11)	пф	nd	nd	nd	nd	ndi	nd	nđ
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	7.9	128	лд	nd	nd	nd
CHLOROBENZENE	nd	пд	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	15,1	2.7	nd	nd	nd	nd
TOLUENE	nd	nđ	11.7	6.3	nd	nd	nd	nd
m&p-XYLENES	nd	nd	15.5	9.9	nd	nd	nd	nd
o-XYLENE	nd	nd	16.3	3.4	nd	nd	nd	nd
SURROGATES		-						
1,4 DIFLUORO BENZENE	8.6	16.9	8,6	17.3	8.6	15.8	8.6	16.8
4 BROMOFLUORO BENZENE	17,8	37.2	17.8	35.2	17.9	35.4	17.9	36,3
ND INDICATES NOT DETECTED AT A DETECTION I	LIMIT OF 1.0 UG/L-V/	APOR FOR EACH	COMPOUND					

ANALYSES PERFORMED ON-SITE IN CA DOHS MOBILE LABORATORY (CERT #1667)

ANALYSES PERFORMED BY: MARK BURKE